



***Traveler Information
Efforts in NC***



Customer Feedback

- ❖ *Smartlink RFP Update*
- ❖ *TIMS & 511 Changes*
- ❖ *ITS Inventory Database*
- ❖ *Speed Info*
- ❖ *WZ Traffic Control Final Rule*
- ❖ *DMS Policy*
- ❖ *Effectiveness of Traveler
Information Research*

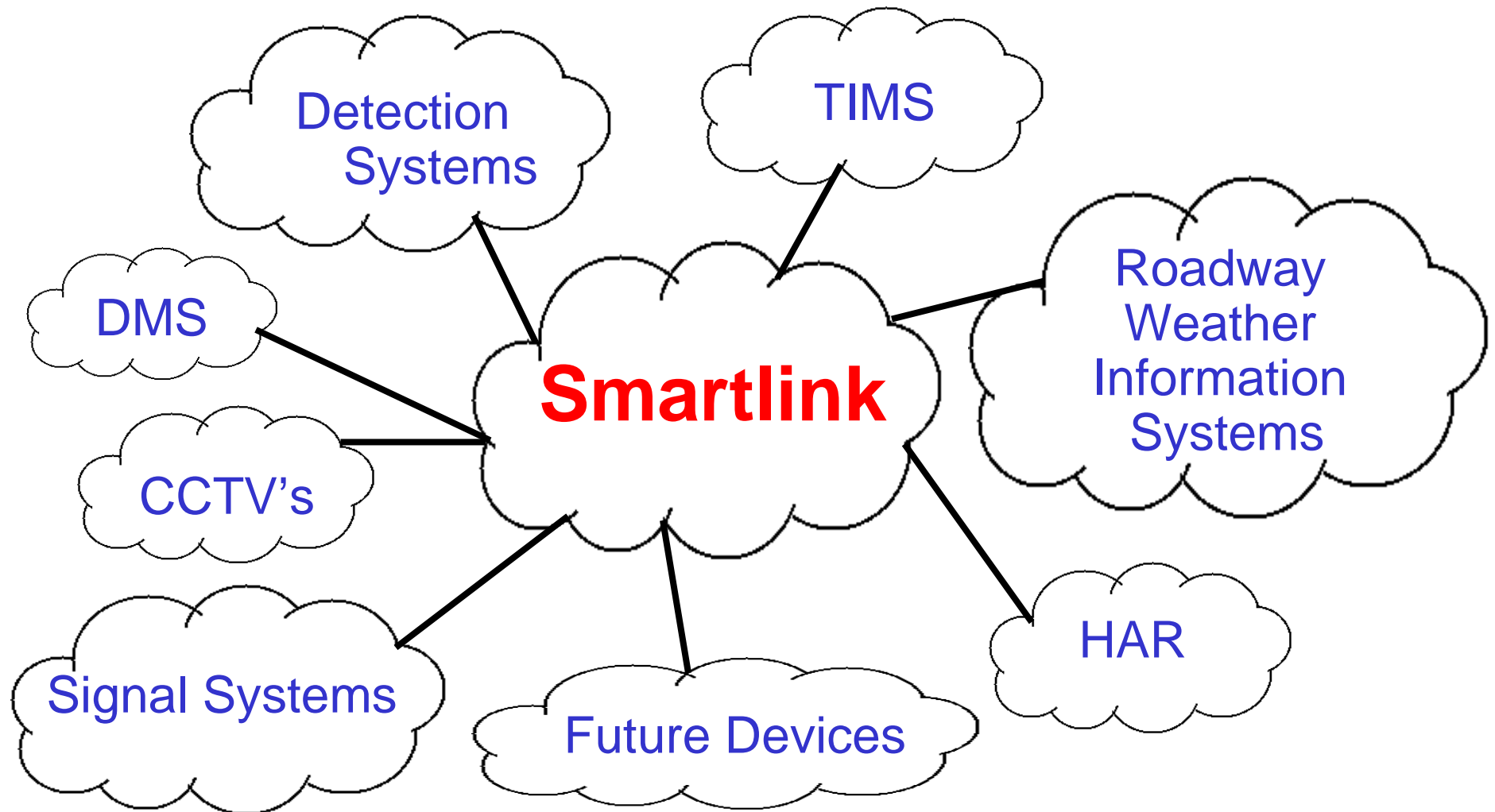


Smartlink RFP Update

❖ **Purpose:**



To build a single platform that integrates all devices NCDOT has deployed.







Traveler Information Management System (TIMS)




What is TIMS?

- 
- 
- 
- 
- ❖ NC's website that provides highway information on unusual delays that occur on our roadways due to construction, maintenance, accidents, weather, etc..
 - ❖ The information that is entered into TIMS is entered by our field personnel from construction, maintenance, and our Transportation Management Centers (TMC).

www.ncdot.org/travel information

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SEARCH!
SMARTLINK

 NC DOT
 NC DOH
 NC GOV

[www.ncsmartlink.org](#) [Your Link to NCDOT Traveler Information](#)

[Traffic Cameras](#) | [511](#) | [Public Service Announcements](#) | [About Us](#) | [Emergency Information](#) | [Links](#)

>> LIVE CAMERAS

NC Smartlink Maps

☐ Metrolina Region

- ☐ Metrolina
- ☐ Metrolina North
- ☐ Metrolina South

☐ Triad Region

- ☐ Greensboro
- ☐ Winston-Salem

☐ Triangle Region

- ☐ Triangle
- ☐ Durham / I-40
- ☐ I-40 / RTP
- ☐ Raleigh

Additional Cameras

☐ Municipal Sites

- ☐ Wilmington
- ☐ Hickory
- ☐ High Point
- ☐ Salisbury
- ☐ Winston-Salem
- ☐ Greensboro

HOME



To view road condition information, visit

Real Time Travel Information



[2006 IM/ITS Conference](#)

 North Carolina 511
Statewide Travel Information

 The North Carolina
Department of Transportation

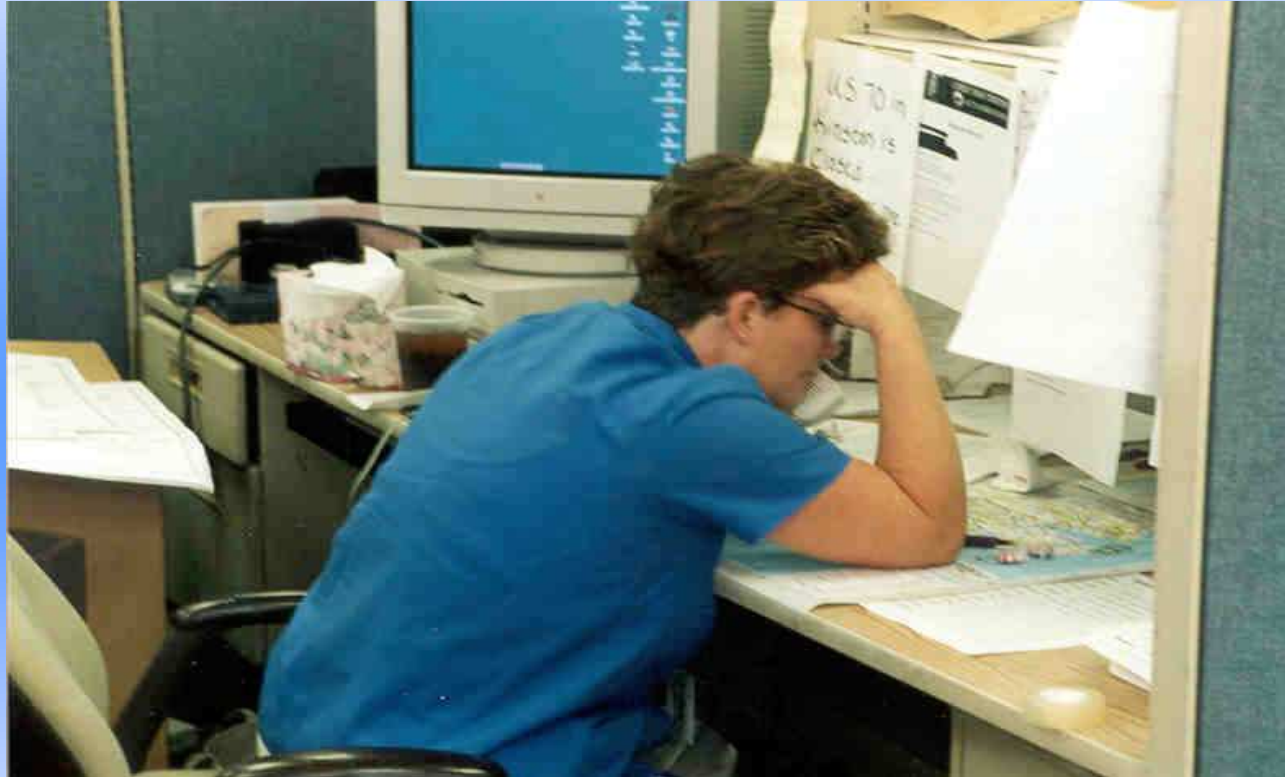


Why did we implement TIMS?



- ❖ Hurricane Floyd -1999
- ❖ Influx of calls during/after storm


Life before TIMS






160,000 Calls

❖ Improve Customer Service

Traveler Information Management System (TIMS)

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**
Traveler Information Management System

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 NC SMARTLINK
 NCDOT
 NC-GOV

Login

FAQ | Maps | Tourism | Cameras | **Emergency Info.**

>> Other Info


- Ferry Info
- Train Info
- Travel Info for Other States
- Construction Projects


Traveler Information Management System

**Welcome to NCDOT's
Traveler Information Management System. (TIMS)**


Get real time information on events that cause severe and unusual congestion on NCDOT maintained roadways in North Carolina by clicking a region on the map, by choosing a county, or by choosing a road below.

Select by Region: Route: County:






Download all Active Incidents into Excel 

Traveler Information Management System (TIMS)

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**
Traveler Information Management System

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» Other Info

Incidents for I-95

Incident Detail

Location



Robeson County, Near St. Pauls
I-95 (Mile Marker 35 to 36) Both Directions
1 of 2 lanes closed.
Expected backup is 1 to 2 miles

Start Time

3/15/2005 07:30 AM

End Time

3/29/2005 04:00 PM

Reason

Maintenance: Lane(s) Closed

Left lane in north and south direction closed due to median cross over construction

DETOUR

None

Marion	Clear	Clear	Clear
Harnett	Clear	Clear	Clear
Johnston	Clear	Clear	Clear
Nash	Clear	Clear	Clear
Northampton	Clear	Clear	Clear
Robeson	Clear	Clear	Clear
Wilson	Clear	Clear	Clear

TIMS Changes

❖ Added new Incident Types:

- ♦ Night Time Construction
- ♦ Weekend Construction
- ♦ Night Time Maintenance
- ♦ Fog


AEGeneral - Microsoft Internet Explorer provided by NCDOT v.05.1b

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media Print

Address <https://apps.dot.state.nc.us/TIMS/admin/AEGeneral.aspx> Go Links

Google Search 201 blocked ABC Check AutoLink AutoFill Options

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Traveler Information Management System

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Admin | Logoff

FAQ | Maps | Tourism | Cameras | Emergency Info.

Administration

- Admin Home
- Add Incident
- Search for Incidents
- Manage Notifications
- Set Special Alert
- Email all Users
- Manage Users
- Add a New Route

General

County: Incident Type:

Road: Condition:

Expected Backup: Start Time:

Event: End Time:

Next >

Vehicle Accident
Disabled Vehicle
Construction
Maintenance
Night Time Construction
Weekend Construction
Special Event
Congestion
Road Obstruction
Night Time Maintenance
Weather Event

ina
Transportation
:58 PM

TIMS Changes

❖ *Added/Modified Conditions:*


- ♦ Lane Closed vs. Lanes Closed
- ♦ Lane Narrowed vs. Lanes Narrowed
- ♦ Moving Closure

AEGeneral - Microsoft Internet Explorer provided by NCDOT v.05.1b

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media Print

Address <https://apps.dot.state.nc.us/TIMS/admin/AEGeneral.aspx> Go Links >>

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Traveler Information Management System

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Admin | Logoff

FAQ | Maps | Tourism | Cameras | Emergency Info.

Administration

- Admin Home
- Add Incident
- Search for Incidents
- Manage Notifications
- Set Special Alert
- Email all Users
- Manage Users
- Add a New Route
- Adverse Weather

General

County: Incident Type:

Road: Condition:

Expected Backup: Start Time:

Event: End Time:

Next >

Lanes Closed

Congestion

Lane Closed

Lane Narrowed

Lanes Closed

Lanes Narrowed

Moving Closure

Ramp Closed

Road Closed

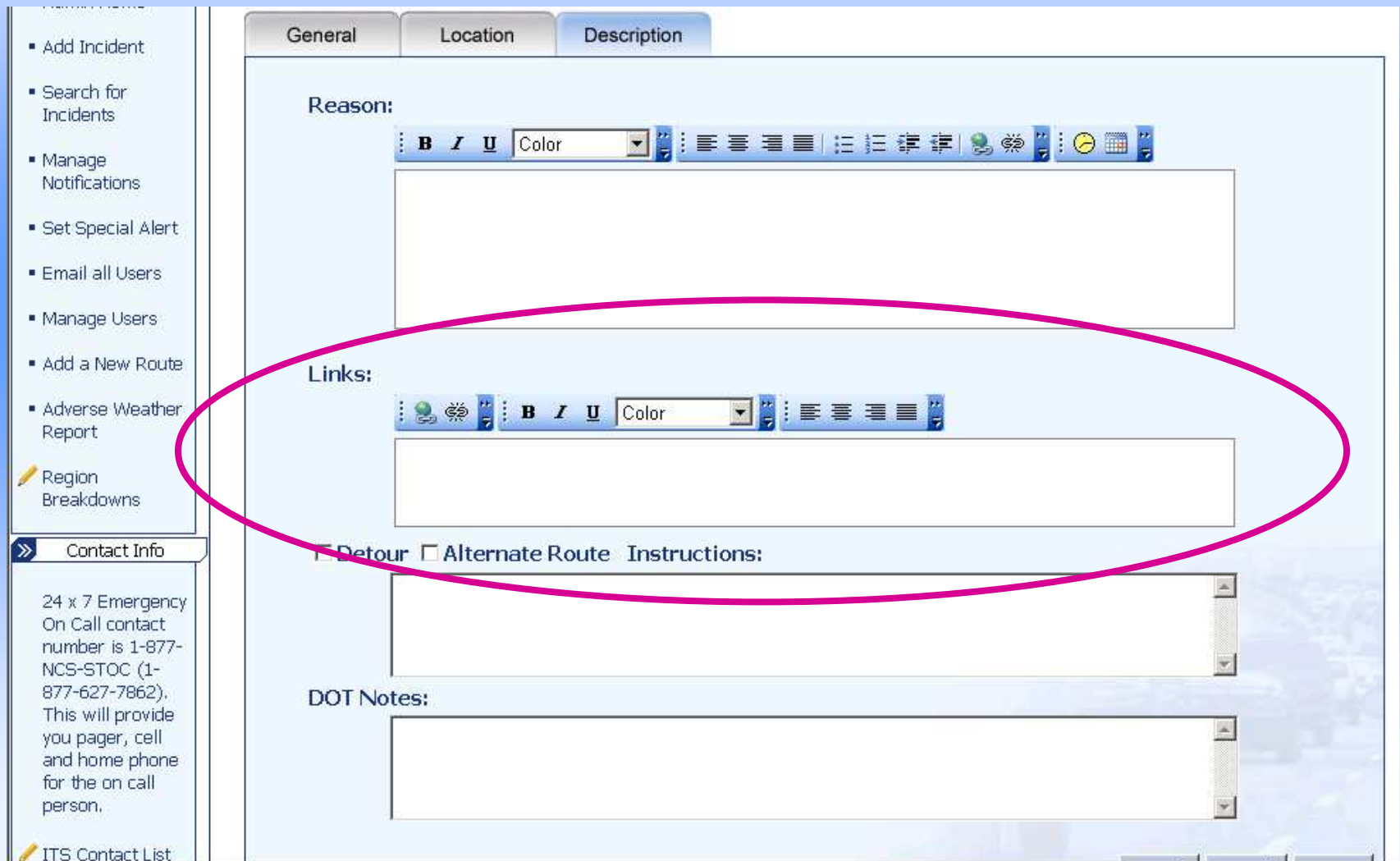
Road Closed with Detour

Road Impassable

Shoulder Closed

TIMS Changes

Added separate area for web links.



The screenshot displays the TIMS software interface with the 'Description' tab selected. The interface includes a sidebar on the left with various menu items and a main content area on the right. A pink oval highlights the 'Links' section, which is located below the 'Reason' section. The 'Links' section contains a toolbar with icons for inserting links and a text area for entering the link details. The 'Reason' section also has a similar toolbar and text area. Below the 'Links' section, there are checkboxes for 'Detour' and 'Alternate Route', followed by an 'Instructions' section with a text area. At the bottom, there is a 'DOT Notes' section with a text area. The sidebar on the left includes a 'Contact Info' section with a '24 x 7 Emergency On Call contact number is 1-877-NCS-STOC (1-877-627-7862). This will provide you pager, cell and home phone for the on call person.' and an 'ITS Contact List' section.

General | **Location** | **Description**

Reason:

Reason text area

Links:

Links toolbar and text area (highlighted by pink oval)

☐ Detour ☐ Alternate Route **Instructions:**

Instructions text area

DOT Notes:

DOT Notes text area

Sidebar:

- Add Incident
- Search for Incidents
- Manage Notifications
- Set Special Alert
- Email all Users
- Manage Users
- Add a New Route
- Adverse Weather Report
- Region Breakdowns
- Contact Info**
- 24 x 7 Emergency On Call contact number is 1-877-NCS-STOC (1-877-627-7862). This will provide you pager, cell and home phone for the on call person.
- ITS Contact List

TIMS Changes

Added ability to differentiate between detour and alternate route.

The screenshot displays the TIMS web application interface. On the left is a sidebar with navigation links: Add Incident, Search for Incidents, Manage Notifications, Set Special Alert, Email all Users, Manage Users, Add a New Route, Adverse Weather Report, Region Breakdowns, Contact Info, and ITS Contact List. The main content area has three tabs: General, Location, and Description. The 'Description' tab is active, showing a 'Reason:' text area with a rich text editor toolbar, a 'Links:' text area with a similar toolbar, and a section with two checkboxes, 'Detour' and 'Alternate Route', followed by an 'Instructions:' text area. A pink oval highlights these two checkboxes. Below them is a 'DOT Notes:' text area. The bottom of the interface shows a status bar with a small icon and the text 'ITS Contact List'.

General Location **Description**

Reason:

Links:

☐ Detour ☐ Alternate Route Instructions:

DOT Notes:

24 x 7 Emergency On Call contact number is 1-877-NCS-STOC (1-877-627-7862). This will provide you pager, cell and home phone for the on call person.

ITS Contact List

TIMS Suggestions

- ❖ Don't abbreviate or use symbols in free form fields. (ie - Reason Field)

Examples: am, US, NC , #, @,

- ❖ Put more detail in the Detours/Alternate Routes Information

- ♦ Not Detailed:

Take US 70

- ♦ Detailed:

Take Exit 996 off of I-40 to US 70.

Take a right on US 70 east to NC 49.

Take a left on NC 49 back to I-40. This will put you back on I-40 at Exit 999.

- ❖ Don't update old incidents for new ones.
(Search for Incidents)

- ❖ If incident occurs in vicinity of WZ, check box.



Where your travel information begins

511 Deployment Status

as of May 31, 2006

Accessible by 32% of Population

■ = 511 Operational ("Live")

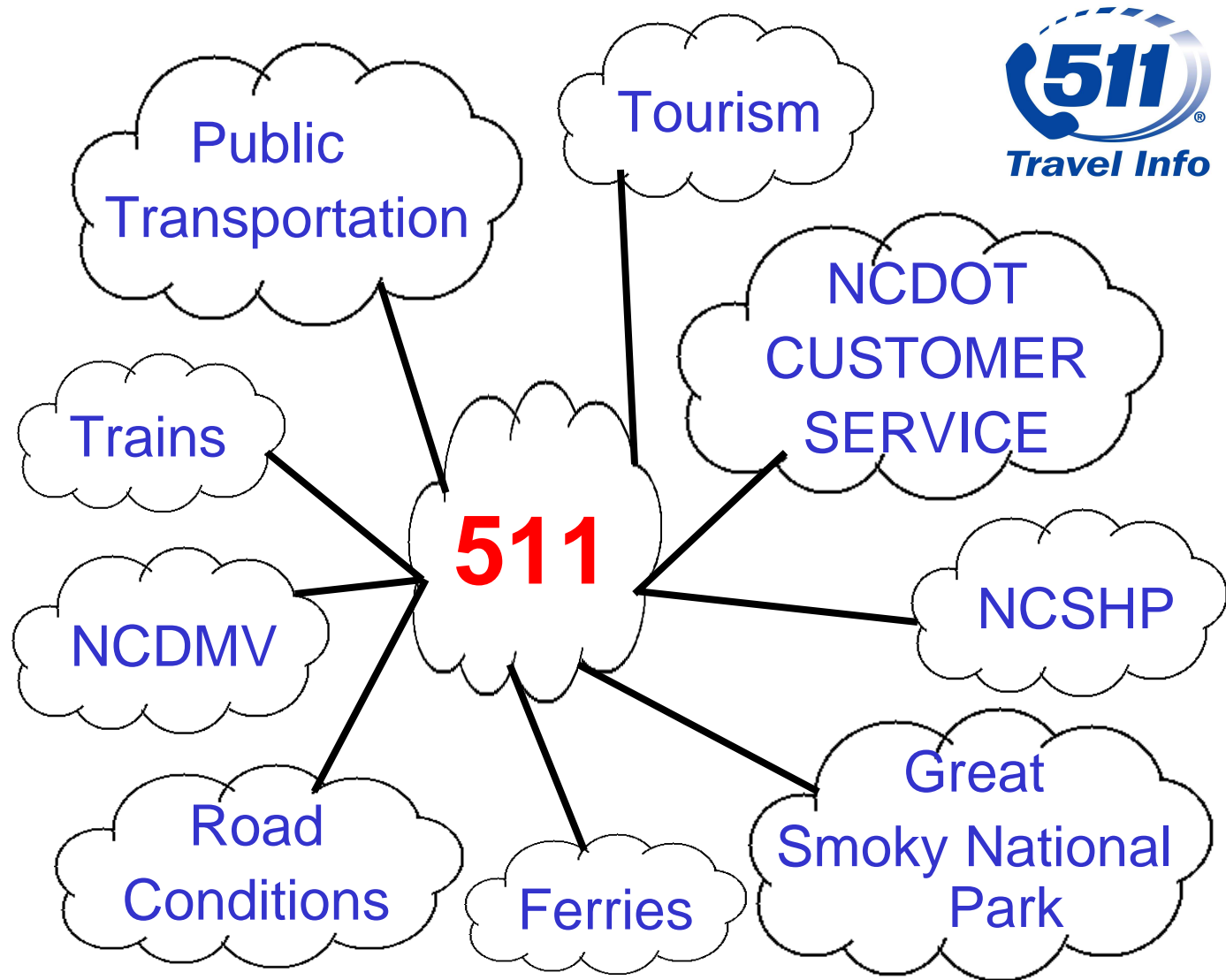
▨ = Expect 2006 Launch



Accessible by 54% of Population in 2006



Goal of NC's 511 Program





511 System Features



- ♦ Multi-modal
- ♦ Voice activated/recognition system
- ♦ Points to 800 toll free number therefore, it is a free call to users
- ♦ Allows for Floodgate messages
- ♦ No Busy Signal to the caller



- ♦ 68 ports
- ♦ 92 ports for queued calls
- ♦ Weather impacts that could affect travel:
 - ♦ forecasted
 - ♦ current
- ♦ Call persistence
- ♦ Call interruption



NC 511 System - Highway Coverage

❖ Roads covered: 135 / 13,406 miles

- ♦ Interstates 15 / 1,125 miles
- ♦ US Routes 36 / 5,906 miles
- ♦ NC Routes 58 / 5,711 miles
- ♦ Alternate/
Business Routes 15 / 664 miles

❖ Segments covered: 366





NC 511 System - Highway Coverage



13 Metropolitan Areas:



♦ *Asheville*

♦ *Rocky Mount - Wilson*

♦ *Fayetteville*

♦ *Salisbury*



♦ *Greenville*

♦ *Statesville*



♦ *Hickory*

♦ *Triangle*

♦ *Jacksonville*

♦ *Triad*



♦ *Metrolina*

♦ *Wilmington*

♦ *New Bern*



120 Cities



100 Counties








System Upgrades



❖ Menu Tree:

- 
- 
- 
- ♦ Added weather to main menu
 - ♦ Changed Introduction
 - ♦ Explained to the caller how to use the system
 - ♦ Revamped Help instructions
 - ♦ Added some routes
 - ♦ Changed format of system and how caller interacts with system
 - ♦ Added new metro areas
 - ♦ Added ability to allow callers to report incidents



❖ System Performance:

- 
- ♦ System Usability Testing
 - ♦ Focus Groups



❖ Other initiatives:

- 
- ♦ Added Charlotte Area Transit Agencies & Blue Ridge Parkway
 - ♦ Working on installing first phase of signs
 - ♦ Distribution of Printed Material

System Upgrades

❖ Floodgate messages:

- ♦ Floodgate prompts to types:
 - Mandatory & Opt-in
- ♦ Prioritization
- ♦ Added County Floodgates
- ♦ Multiple floodgates
- ♦ Delayed Start Time and Time out
- ♦ Delayed Start Date and End Date
- ♦ Accept .wav files from other sources (weather/AMBER)

❖ Daily Weather

- ♦ Current Temperature/ Wind Speed/ Chance of Precipitation
- ♦ Daily Highs & Lows

❖ Forecasted Weather

- ♦ Extended Weather for 2 Days

❖ Weather Alerts

- ♦ Flooding
- ♦ Tornadoes

Tuesday, Jul 18



Hot with sun and some clouds. Winds from the W at 8 mph. High: 94° F



Tuesday Night: Humid with patchy clouds. Winds from the SW at 8 mph. Low: 72° F

Wednesday, Jul 19



Hot with partial sunshine. Winds from the SE at 8 mph. High: 94° F



Wednesday Night: Patchy clouds and humid. Winds from the SSW at 7 mph. Low: 72° F

Thursday, Jul 20



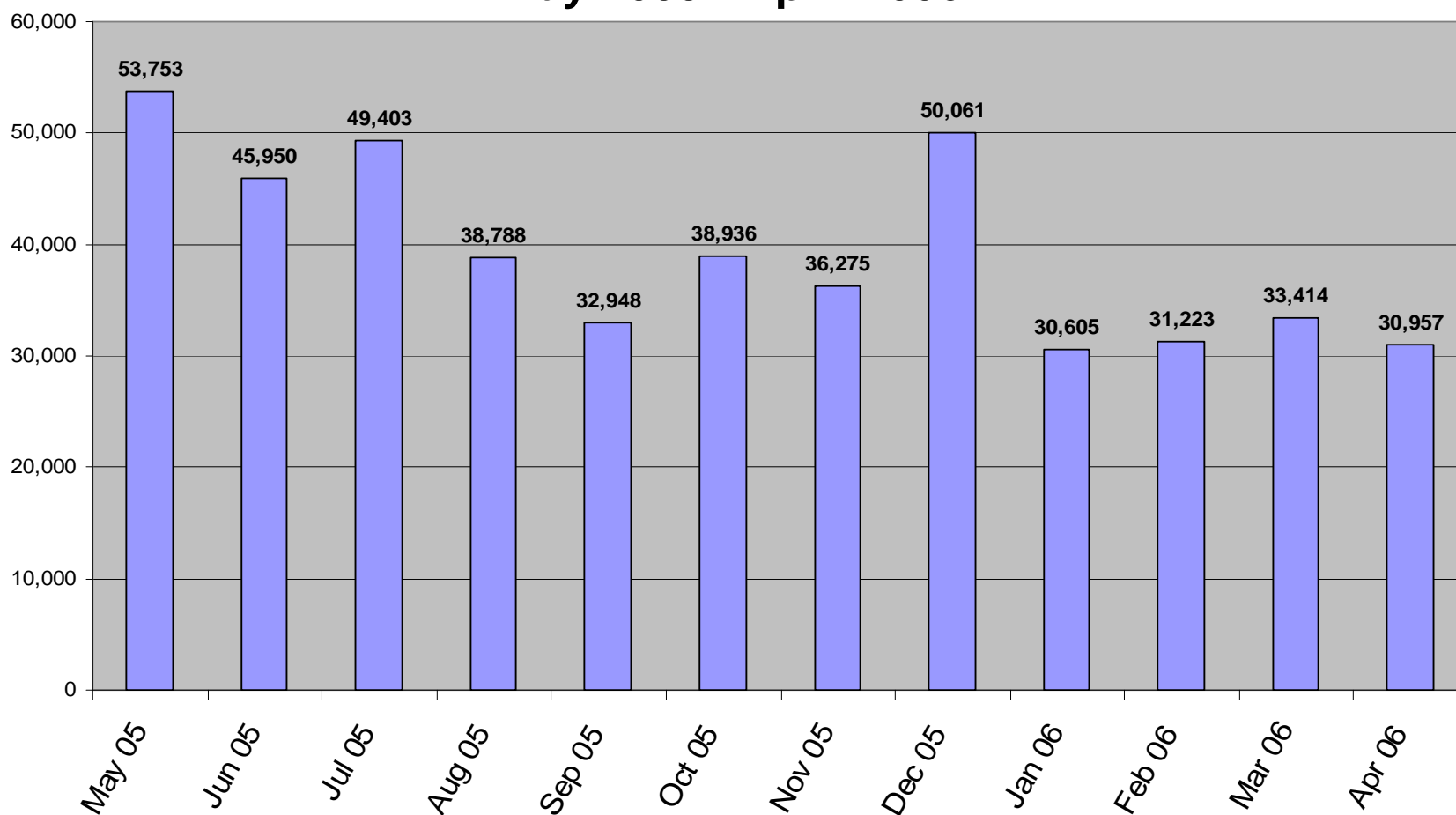
Mostly sunny. Winds from the N at 8 mph. High: 91° F



Thursday Night: Partly cloudy. Winds from the WSW at 5 mph. Low: 72° F

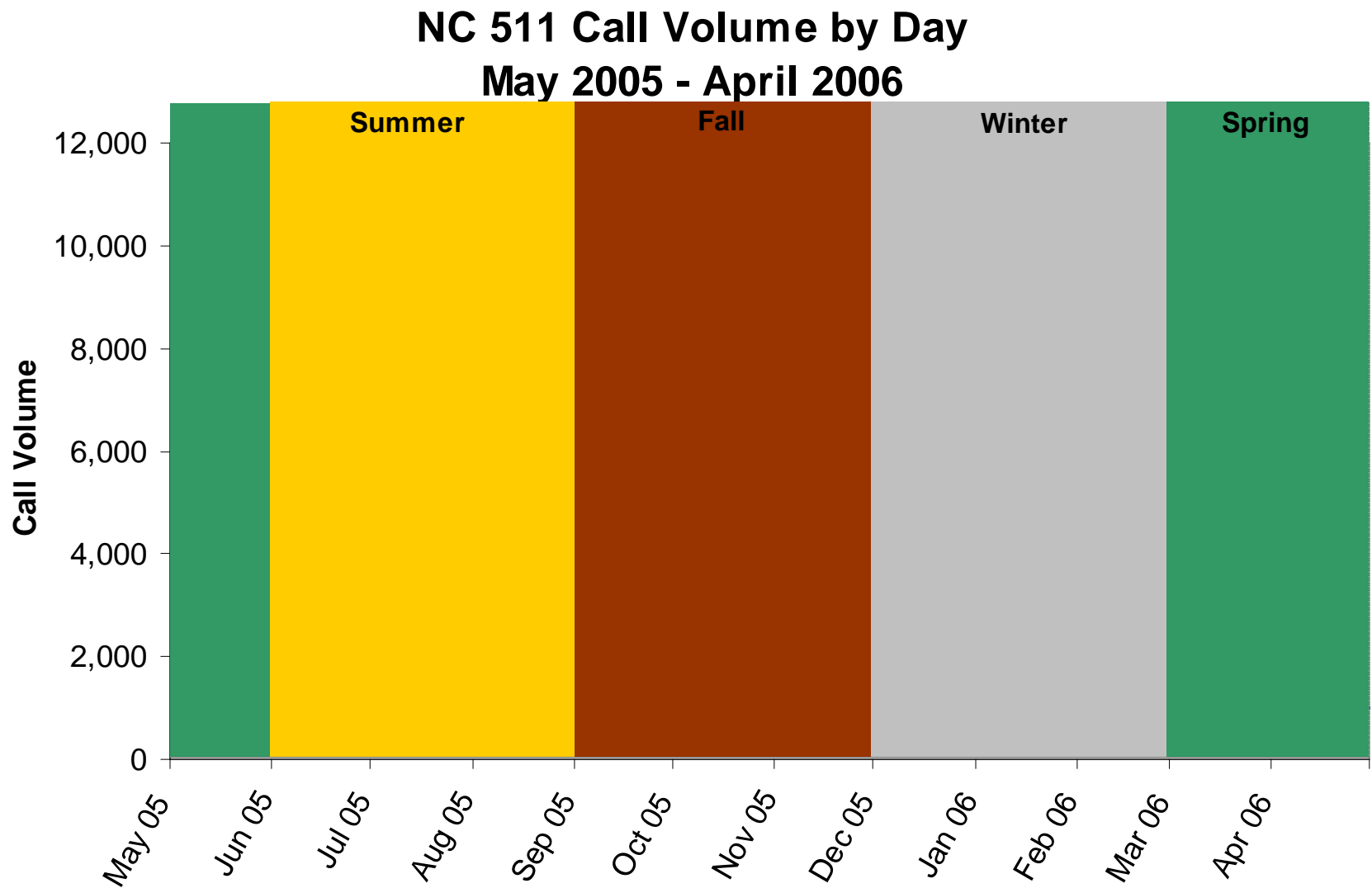
NC 511 Call Volume by Month

**NC 511 Call Volume by Month
May 2005 - April 2006**



 ***Total Calls to Date: 1,230,701***

NC 511 Phone Calls by Day

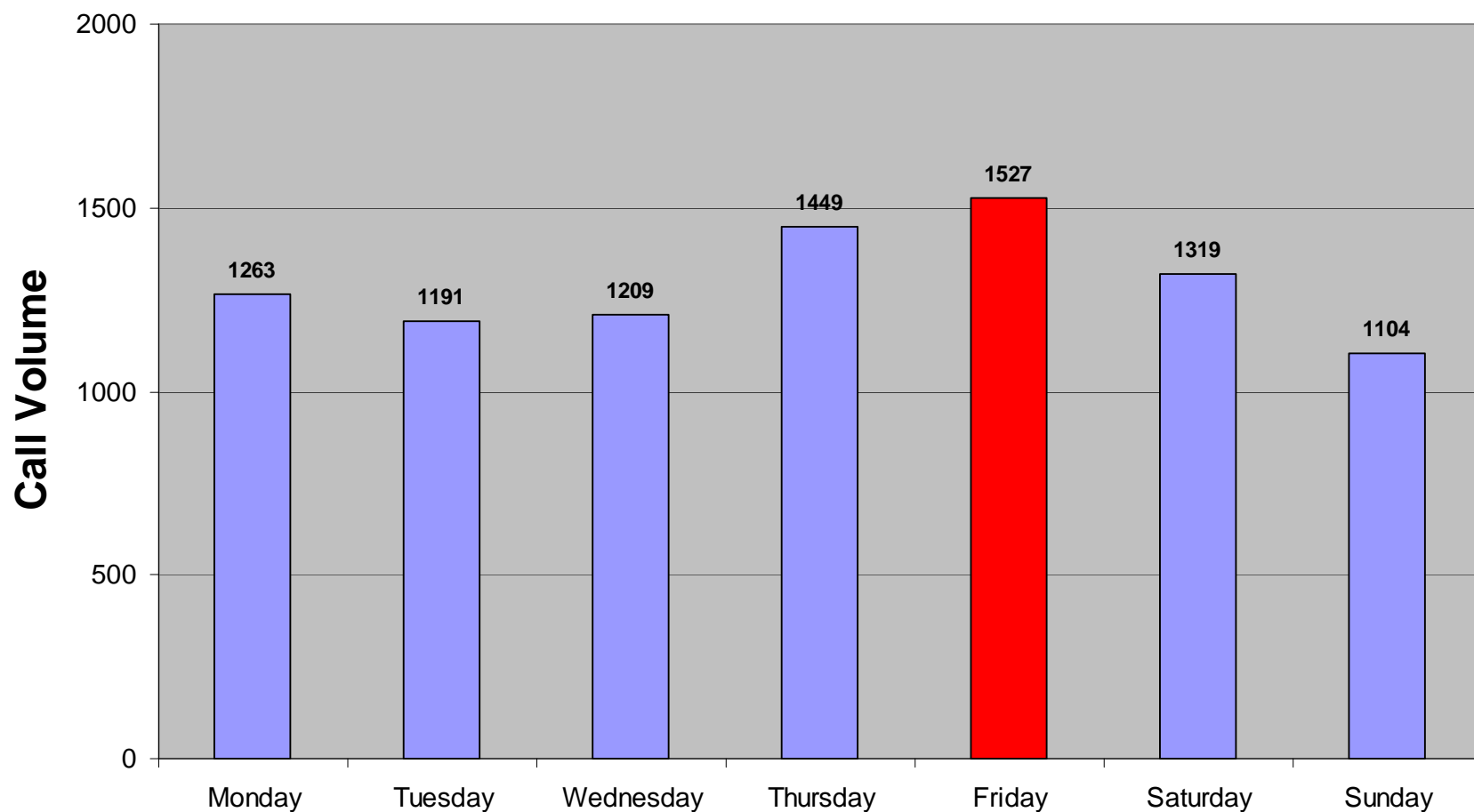




NC 511 Phone Calls by Day of Week



**Average Calls by Day of Week
May 2005 - April 2006**

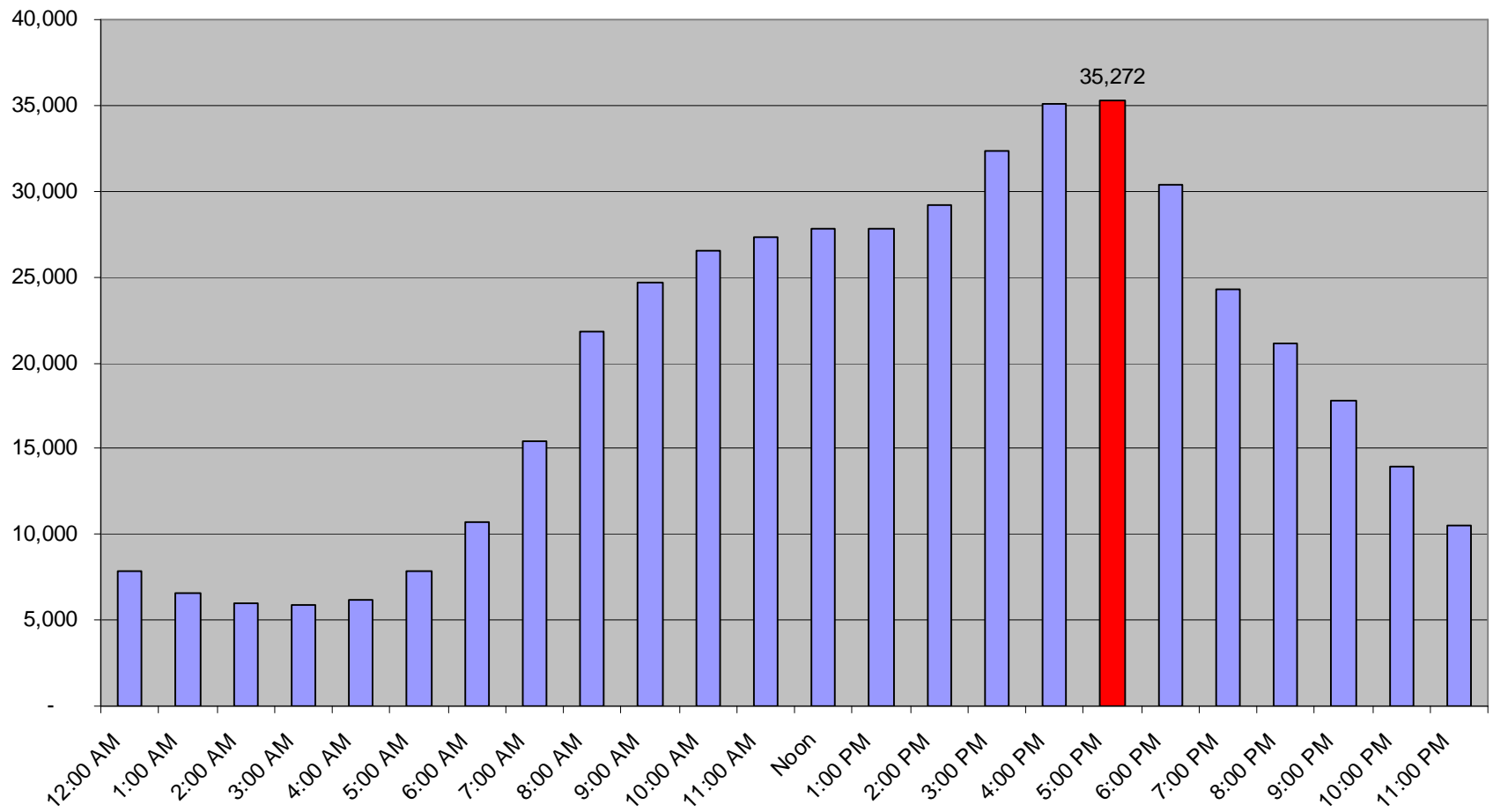




NC 511 Phone Calls by Hour of Day

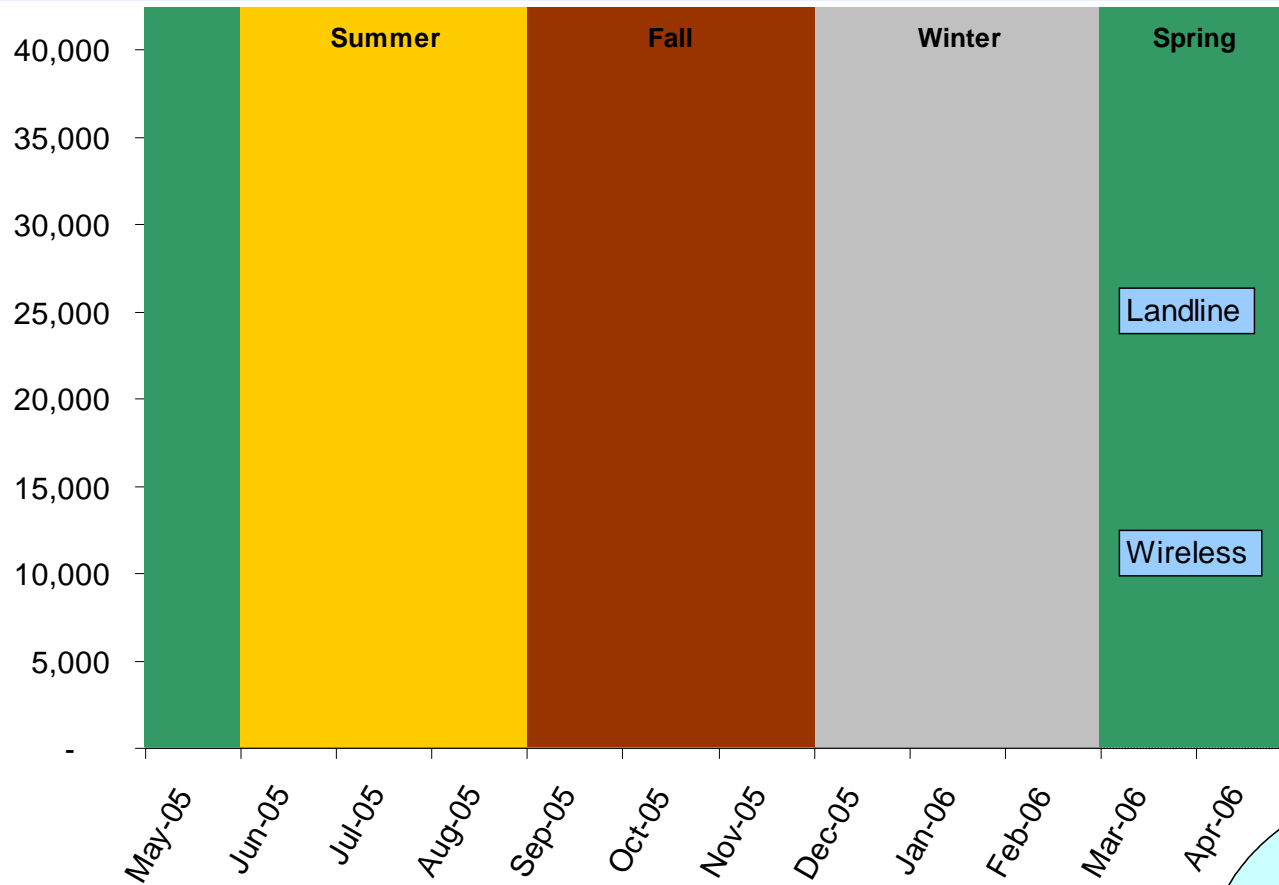


**Call Volume by Hour of Day for Period
May 2005 - April 2006**

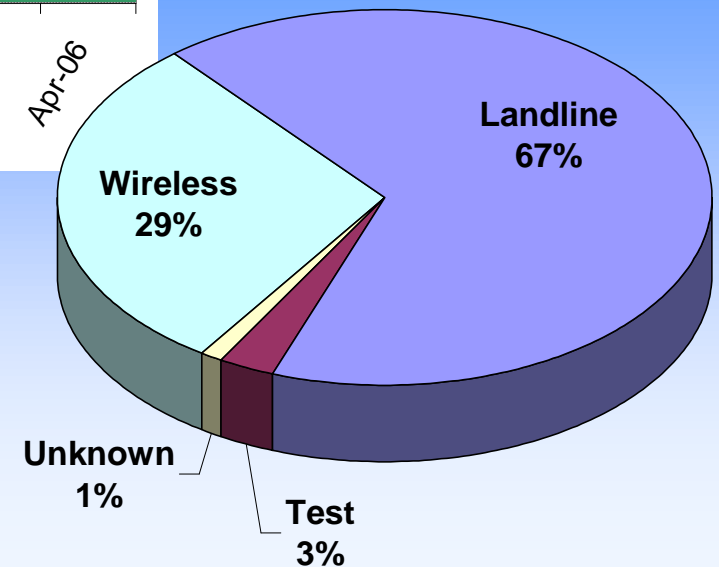




Wireless vs. Landline Trend for Period

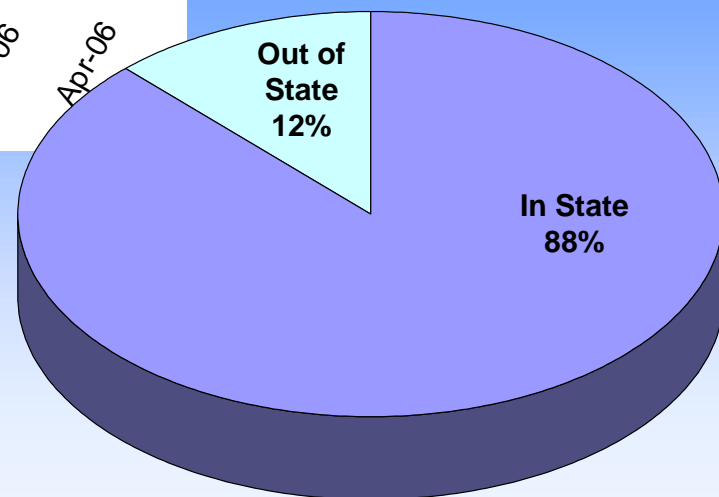
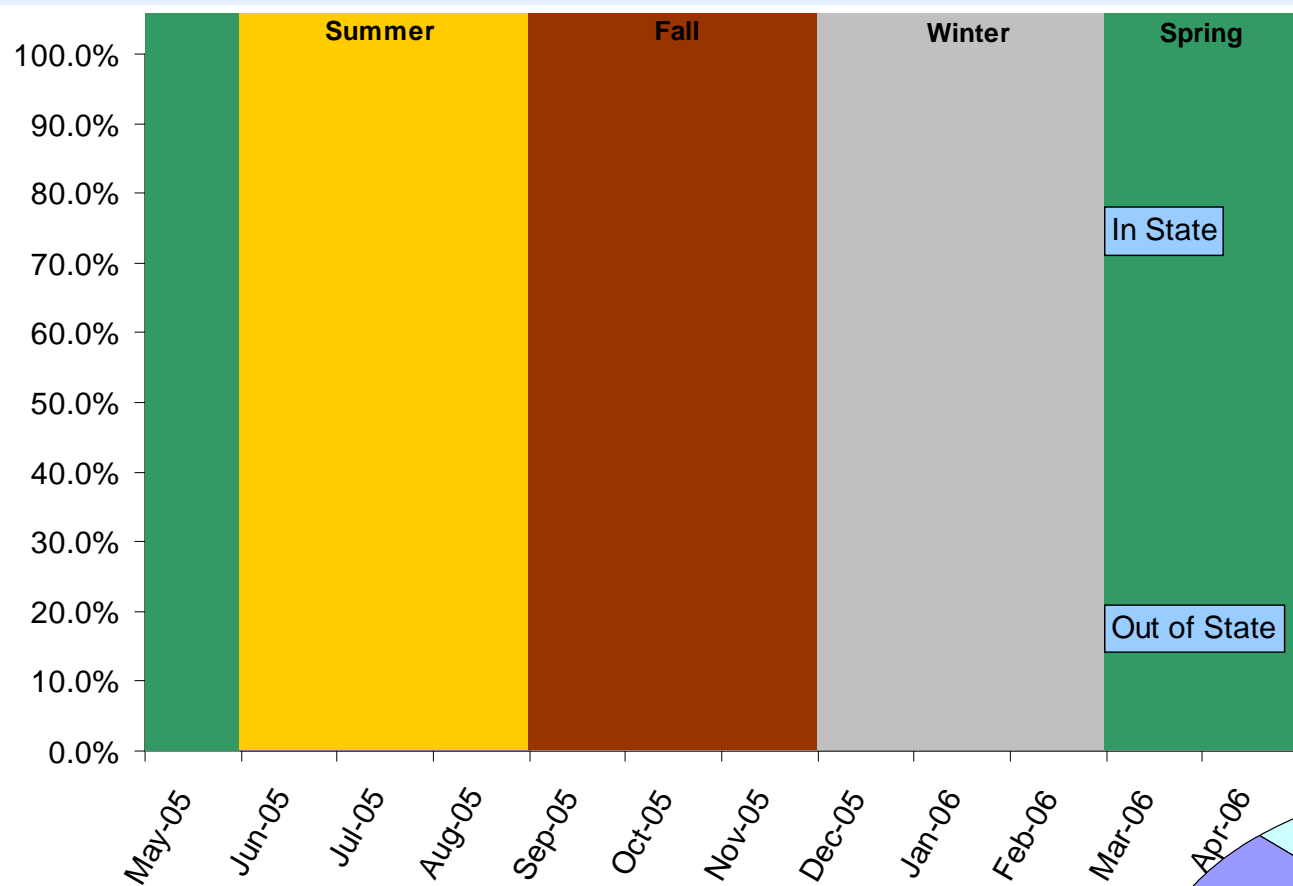


For December, as the spike in the chart at left shows, you can see that a relatively higher number of callers used landline phones to call the system during the snow and ice storms we had that month.





In State vs. Out of State Calls for Period



Who Calls North Carolina 511?

In a typical month, NC 511 receives calls from many different area codes including the following:



- All 50 States



- 8 Canadian Provinces



- Puerto Rico



- US Virgin Islands



- The Bahamas



- Guam



- Dominican Republic

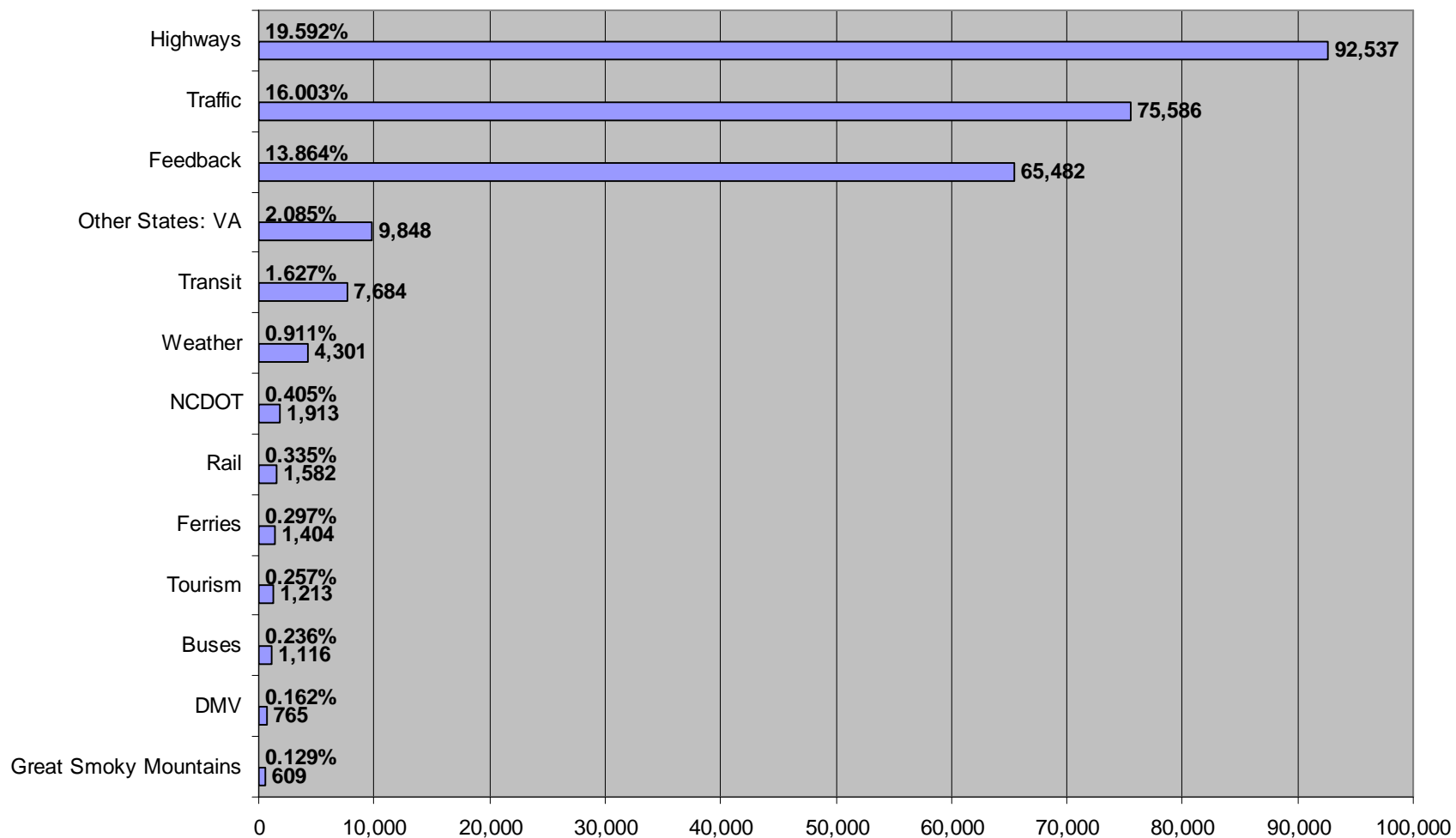
The table below includes the states that have each been in the top 5 list of states calling for at least one month in this period. They account for 93.7% of all calls to the system.

State	Calls	% of Total
NC	396,239	85.6%
VA	10,477	2.3%
SC	8,417	1.8%
FL	6,009	1.3%
TN	5,638	1.2%
MD	2,504	0.5%
GA	2,458	0.5%
NY	1,790	0.4%

Type of Info Requested

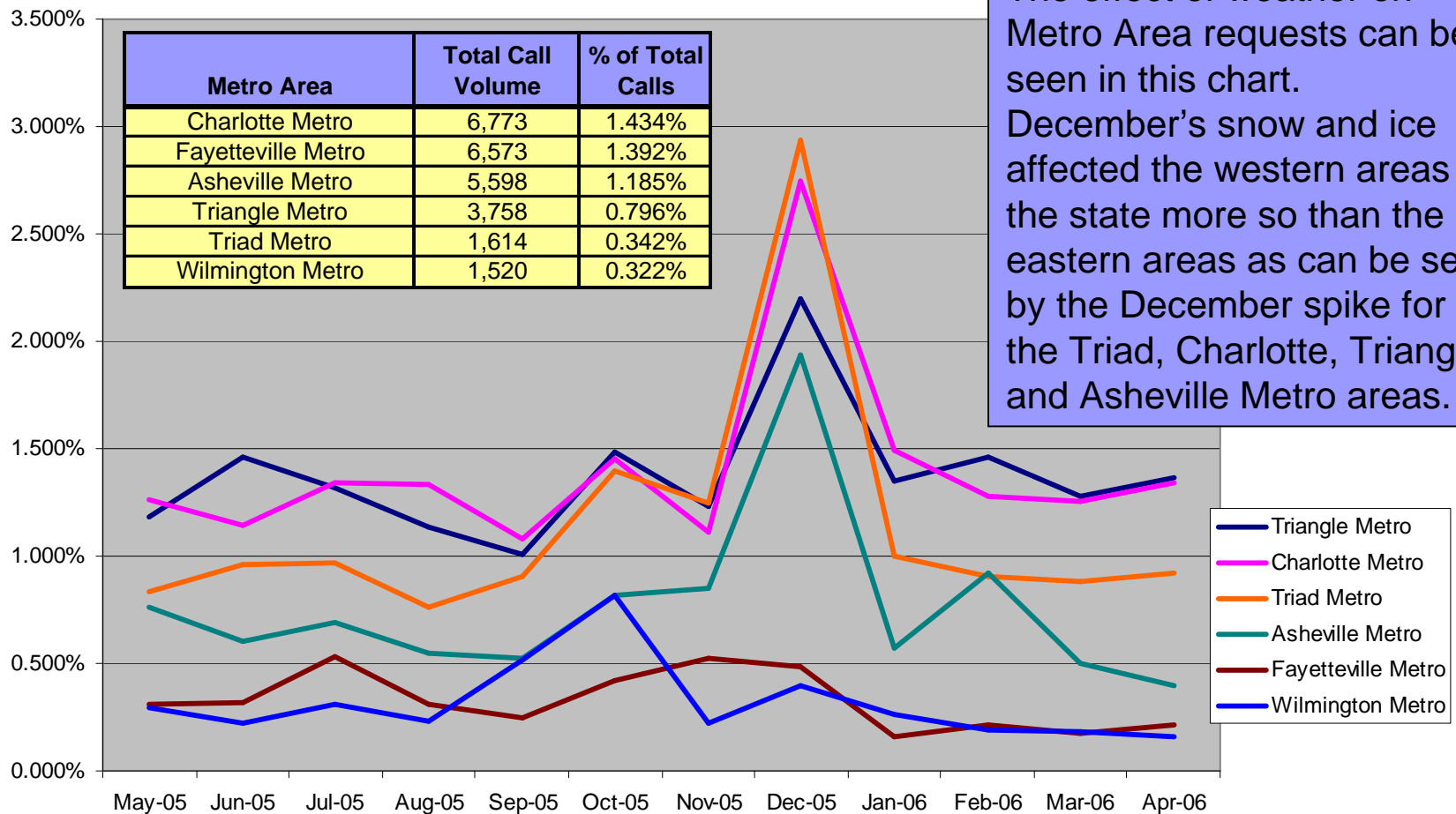
NC 511 Call Requests by Type of Information for Period

Percent Values are % of Total Calls for Period



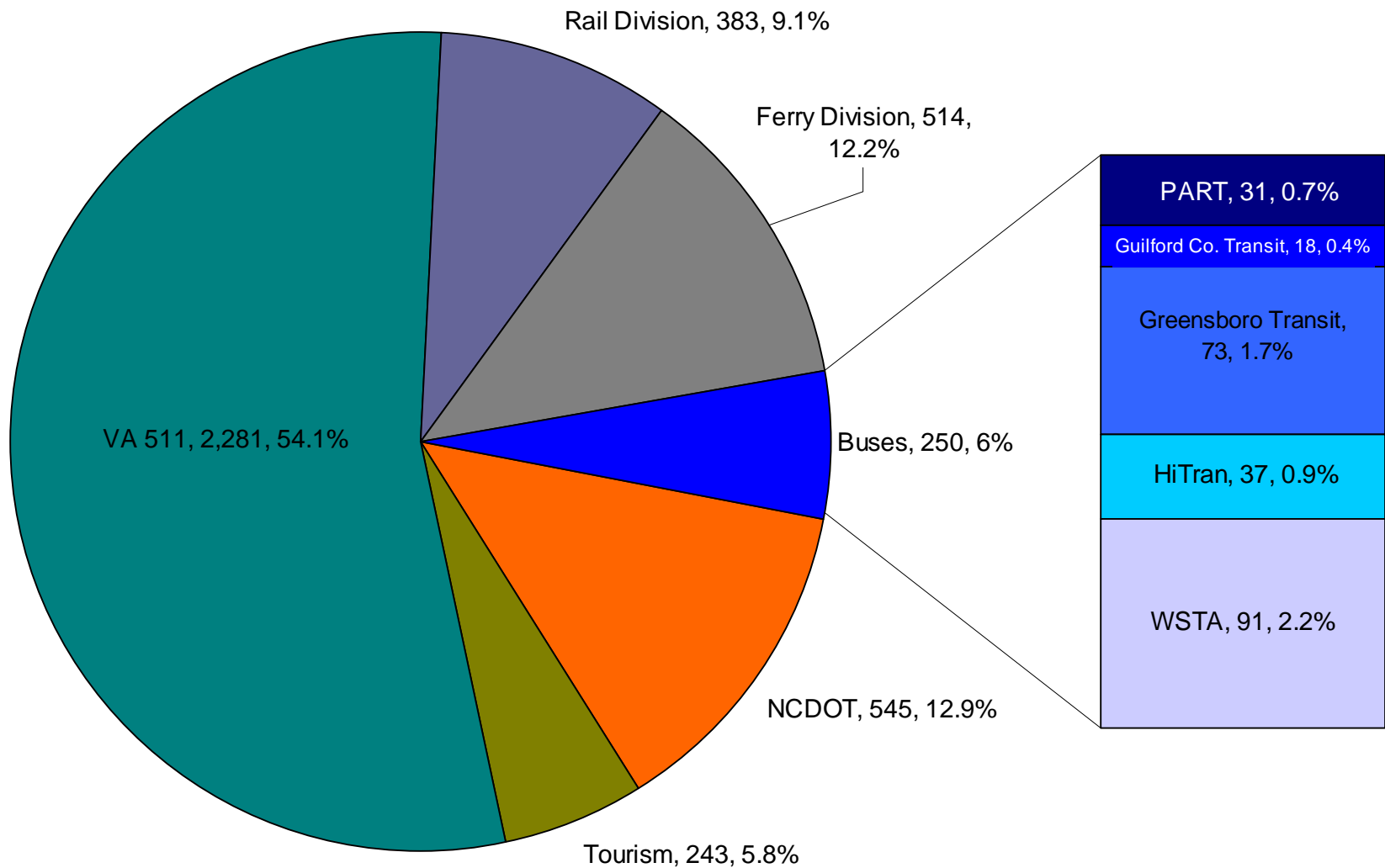
Metro Area Requests for period

Values are a percent of each month's call volume



Call Transfers for Period

Chart shows totals and percentage of total calls



Speedinfo Devices

❖ ***Easy Installation (3 days)***

❖ ***Solar Powered***

❖ ***Wireless Communication***

❖ ***Measures vehicle speeds***

❖ ***Anonymous data***

❖ ***Speedinfo provides data to NCDOT***

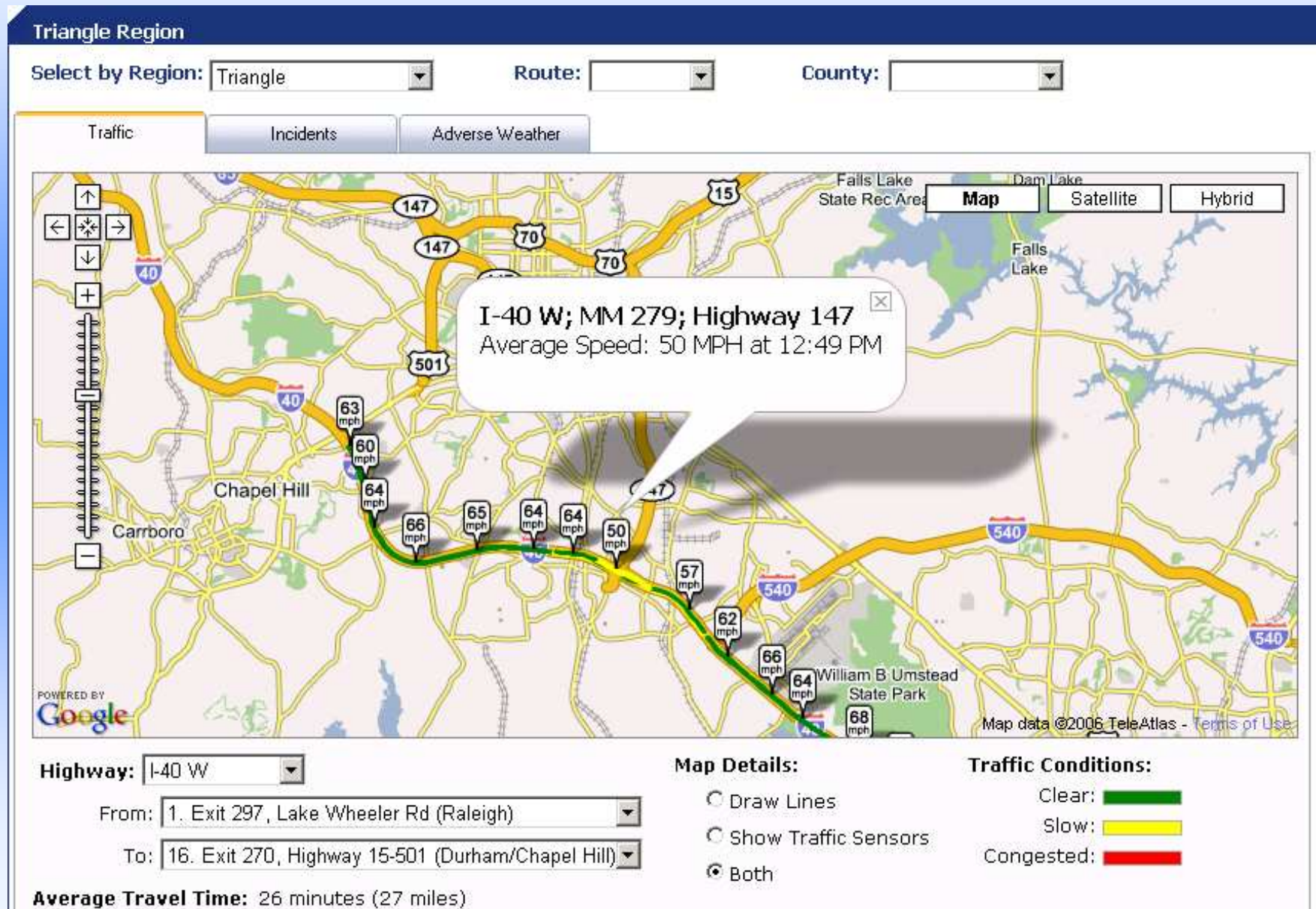
❖ ***40 sensors install under pilot program***

♦ ***I-40 from MM 273 - 298***

♦ ***I-95 from I-40 to Virginia State line***



Speedinfo - Public View



Speedinfo - TIMS / 511

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Traffic Information Management System

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Incident Detail

Location



Wake County

I-40 (Mile Marker 292) Heading West

Congestion

Expected backup is 1 to 2 miles

Start Time

5/15/2006 06:38 AM

End Time

5/15/2006 07:08 AM

Reason

Congestion: Congestion



Traffic is travelling at 24 MPH at: I-40 W; MM 292; US 1 / I-440



The North Carolina
Department of Transportation
5/30/2006 4:29:30 PM






ITS Inventory Database

- 
- ❖ *Database to inventory all ITS devices.*
 - ❖ *Information inventoried will include:*
 - ♦ *Manufacturer*
 - ♦ *Model*
 - ♦ *Maintenance History of devices*
 - ♦ *Times/Dates of Maintenance performed*
 - ♦ *Location of devices*
 - ❖ *Intent is to be able to see what is reliable and working for us, so we don't keep specing bad devices/parts.*
- 



Work Zone Final Rule









- 
- Federal Highway Administration (FHWA) asked drivers what frustrated them most in their travels
 - One of their top replies was “Traffic delays due to work zones”
 - FHWA has mandated the DOT’s to do a better job minimizing disruptions due to work zones
- 
- 









NCDOT WZFR Goals



- 
- Provide safer WZ for workers and travelers
- 
- Consider mobility and access in WZ
- 
- Allow innovation in WZ strategies
- 
- Improve credibility of WZ
- 
- Continually re-assess practices and procedures
- 
- Create DOT culture dedicated to improve WZ mobility and safety









Sample Strategy: Better Traveler Info

- 
- 
- 
- 
- 
- 
- More advanced notice of WZ's
 - Timely and accurate info on TIMS/511
 - Better use of permanent ITS devices for WZ
 - More pro-active outreach to affected motorists, communities, businesses, emergency response agencies, etc.









Sample Strategy: Better Scheduling of Work

- 
- Consider impacts of a construction project on the entire transportation network rather than just the road the project is on.
(example US 1/US 64 in Cary)
- 
- 
- Doing projects in more logical order - ie not building a project that dumps even more traffic into an already congested area - fix the already congested area first!
(Clayton Bypass/I-40)
- 
- 
- 



Other Strategies

- 
- 
- 
- 
- 
- 
- Work with law enforcement to select best enforcement strategy for work zone
 - Collect WZ crash data to analyze and use it to improve future processes and procedures.
 - Consider incident management in the traffic management strategy.



Which Projects to Apply To?



*NCDOT is still in the process of defining
which activities this applies to.*









Some of the considerations include, but aren't limited to:

- 
- Average Daily Traffic
 - Duration of activity
 - Increase Travel Times
 - Major Traffic Generators Affected
- 
- 



Implementation

- 
- 
- 
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- 
- 
- NCDOT has a committee working on how we will implement this in North Carolina
 - NCDOT's goal is to have the WZFR policy implemented by Fall of 2006.
 - Federal mandate requires DOT's to implement by Fall of 2007.

DMS Policy



❖ *Draft Policy under review*



❖ *Some Changes made:*

- ♦ *Any message on a sign has to be related to the driver taking a driving action.*
- ♦ *Limitation of number of panels displayed and the size of characters is based on speed.*
- ♦ *Displaying of information is based on road where incident is as well as networks that feed corridor.*
- ♦ *Addresses both DMS/ CMS.*
- ♦ *No abbreviations for directions. (ie - NB, EB, etc.)*
- ♦ *References days for less than 7 days; reference date for greater than 7 days.*







Effectiveness of Traveler Information Research

❖ *Purpose of study is:*



To analyze the Advanced Traveler Information Systems (ATIS) technologies being deployed in NC and assess:






- 
- 
- 
- 
- ♦ Effective
 - ♦ Accessible to a wide range of travelers
 - ♦ Accepted/used by travelers to make informed decisions about their trip.



Effectiveness of Traveler Information Research:



❖ ***What does NCDOT hope to gain out of this study?***

- 
- 
- 
- 
- 
- ♦ *Most valuable:*
 - ♦ *Informing Travelers*
 - ♦ *Improving roadways performance*
 - ♦ *Are we getting the best bang for our buck.*
 - ♦ *Is there something out there that we are missing.*



Phase I



Task 1: Literature review

Review existing reports/ documentation from other states and the FHWA related to implementation experience and benefit/cost evaluations.



Task 2: Evaluation tool assessment

Analyze various programs to determine which will provide the best results for the our needs.



Task 3: Cost and evaluation data synthesis

Will look at where Device installations is the most cost beneficial and will provide NCDOT with data to quantify costs and benefits for each device.



Task 4: Catalog current and planned ATIS deployments in NC

Where do we have it, where do we plan on putting it, and are these locations valuable.



Working with Planning to get Triangle Travel Survey.



Phase II



Task 5: Create Evaluation Tool

A system that can evaluate the benefit/cost of implementing devices.



Task 6: Specific Evaluation of Devices in NC

Evaluate technologies that have been deployed across NC, especially in high impact areas to determine benefit/effectiveness.




Task 7: Cost and evaluation data synthesis

Will look at where device installations are the most cost beneficial and will provide NCDOT with data to quantify costs and benefits for each device.



Task 8: Develop framework for ongoing benefits evaluation

Will identify how to collect necessary data and appropriate locations for ITS deployment. Will also conduct ongoing evaluation of ITS effectiveness in NC.





QUESTIONS ?

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